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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/008,121	11/05/2001	William Roeckner	SC11807TS	2853

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MOTOROLA INC
AUSTIN INTELLECTUAL PROPERTY
LAW SECTION
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EXAMINER

JACKSON, BLAINE J

ART UNIT PAPER NUMBER

2685

DATE MAILED: 08/01/2003

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

10/008,121

Applicant(s)

ROECKNER ET AL.

Examiner

Blane J Jackson

Art Unit

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 11/5/01
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-22 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-22 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- 11) ☐ The proposed drawing correction filed on _____ is: a) ☐ approved b) ☐ disapproved by the Examiner.
- If approved, corrected drawings are required in reply to this Office action.
- 12) ☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. §§ 119 and 120

- 13) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.
- 14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).
- a) ☐ The translation of the foreign language provisional application has been received.
- 15) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☒ Information Disclosure Statement(s) (PTO-1449) Paper No(s) 2,3.
- 4) ☐ Interview Summary (PTO-413) Paper No(s). _____.
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: _____.

DETAILED ACTION

Claim Rejections - 35 USC § 103

1. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Claims 1-8 are rejected under 35 U.S.C. 103(a) as being unpatentable over Groves, Jr. et al. (U.S. Patent 6,593,807) with a view to Hoyt et al. (EP 1014566A2).

2. As to claims 1-6, Groves teaches a class D switching audio amplifier with a control logic and PCM-PWM converter for receiving a digital input signal via digital signal processing, responsive to a precision oscillator at the switching frequency and comprises a pulse width modulated output signal (figure 4, column 2, lines 15-34 and column 6, lines 1-40). Groves does not teach a switching amplifier for use in proximity to a tuner with indicator signal control means for being coupled to the output of the tuner providing the indicator signal corresponding to a first and second frequency when the control output indicates a first and second condition.

Hoyt teaches an indicator signal control means for a class D switching amplifier for use in proximity to an AM (tuner) radio. Hoyt further teaches a multiple clock controller that selects one of a plurality of output oscillators based upon a comparison of the radio local oscillator to the switching frequency of the class D amplifier (figure 7, column 4,

line 48 to column 8, line 3). It would have been obvious to one of ordinary skill in the art at the time of the invention to substitute the precision oscillator of Graves with a controlled output oscillator of Hoyt to prevent a switching fundamental and harmonics from interfering with the in-chassis tuned frequency AM radio.

3. As to claim 7, Graves teaches prior art configurations for the class D switching amplifier where an audio input data stream is communicated to a digital format conversion first stage, followed by sample rate conversion and then PCM to PWN conversion (figures 1-3). Graves gives examples where the input is a standard audio coding scheme. It would have been obvious to one of ordinary skill in the art at the time of the invention to modify the digital conversion format conversion stage with an analog to digital converter consistent with other common designs for compatibility with analog audio sources.

4. As to claim 8, Graves teaches a digital amplifier compatible with a compact disc input audio (column 2, line 60 to column 3, line 35).

5. Claims 9, 10, 12-22 are rejected under 35 U.S.C. 103(a) as being unpatentable over Hoyt et al. (EP 1014566 A2) with a view to Graves (U.S. Patent 6,593,807).

6. As to claims 9, 10 and 16, Hoyt teaches a method for using the AM local oscillator (tuner) as a reference for making intelligent control decisions about the

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switching frequency of a class D amplifier that does not interfere with a nearby AM radio. Hoyt discloses a multiple clock controller that selects an oscillator frequency to signal the switching amplifier based on the AM local oscillator (signal input from the tuner) and a special logic algorithm (column 12, line ²⁷42 to column 13, line 25). Hoyt further suggests an embodiment (of the indicator means) that uses two or more oscillators (to establish the switching frequency/ indicator signal) and tests for the least distorted output signal (the audio output of the AM radio) (column 13, lines 12-25). Hoyt is not clear as to the integration of the switch frequency controller with the switch amplifier.

Graves teaches a switching amplifier including processor means for receiving a precision oscillator frequency input signal and provides an output signal at a switching frequency that is responsive to the input signal which indicates the switching frequency (figure 4).

It would have been obvious to one of ordinary skill in the art to exchange the precision oscillator of Graves with the frequency determination and source of Hoyt to reduce harmonic interference at the receiver tuned frequency and to also provide a feedback method to detect and self correct for AM receiver output distortion due to harmonic interference received at the tuner selected frequency.

7. As to claim 12, Hoyt teaches a method for using the AM local oscillator as a reference for determining the switching frequency where it is understood in the art the

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local oscillator is the user tuned element in a heterodyne receiver (column 12, lines 27-29).

8. As to claims 13, 17, 20 and 21, Hoyt teaches the indicator control means, a multiple clock controller, that selects one of several (three shown) output oscillators in accordance to an algorithm to avoid interference across a predetermined range of tuner frequencies at the receiver (figure 7, column 12, line 56 to column 13, line 11).

9. As to claims 14 and 19, Hoyt teaches where the controller means changes output oscillator frequency if the input signal (audio output of the AM radio) has interference from the switching output signal (figure 7, column 13, lines 21-23).

10. As to claims 15 and 18, Hoyt teaches a controller as changing the output oscillator frequency based on an indicator signal, the local oscillator of the tuner (figure 7, column 12, lines 27-29).

11. As to claim 22, Hoyt teaches a controller that selects one of several indicators, the switching frequency based on an algorithm with reference to the local oscillator of the AM radio (figure 7, column 12, line 27 to column 13, line 23).

12. Claim 11 is rejected under 35 U.S.C. 103(a) as being unpatentable over Hoyt et al. (EP1014566 A2) and Graves (U.S. Patent 6,593,807) and further in view of

Lindemann (U.S. Patent 4,180,776). Hoyt and Graves teach the switching amplifier as discussed for claim 10. Hoyt and Graves do not teach where the indicator means disables the switching amplifier in response to the tuner indicating that it is in one of a seek mode or scan mode.

Lindemann discloses a typical example that teaches a receiver that utilizes a squelch circuit for deactivating the audio amplifier when the transceiver is not tuned to an active channel. Lindemann teaches the addition of an automatic channel scanning attachment for a CB radio to automatically scan the channels and seek an active channel using the squelch signal to start/stop scanning (figures 2 and 5, column 2, lines 25-44). It would have been obvious to one of ordinary skill in the art at the time of the invention to adapt the audio amplifier of Hoyt and Graves with the audio amplifier control of Lindemann to eliminate audio noise from the receiver when the tuned channel is not active or in the seek/scan mode.

Conclusion

13. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure. Colangelo (U.S. Patent 6,127,885) teaches class D amplifier architecture with a method to reduce switching losses. Ulrick et al. (U.S. Patent 6,498,531) teaches a digital class D audio amplifier which accepts a digitized audio signal without digital to analog conversion. Karki et al. (U.S. Patent 6,545,533) teaches a class D amplifier with a method to reduce EMI with high stability and response to a digital or analog input signal. Hoyt et al. (U.S. Patent 6,587,670) teaches a class D


amplifier with a modified modulation technique to avoid generating harmonics at the receiver selected frequency or its intermediate IF frequency.

14. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Blane J Jackson whose telephone number is (703) 305-5291. The examiner can normally be reached on Monday through Friday, 8:00 AM-5:00 PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Edward Urban can be reached on (703) 305-4385. The fax phone numbers for the organization where this application or proceeding is assigned are (703) 812-9314 for regular communications and (703) 812-9314 for After Final communications.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is (703) 306-0377.

BJ
July 25, 2003


EDWARD F. URBAN
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